

9 contacts the upper surface, is farther from the bottom surface than the lower surface is from the  
10 bottom surface, provides at least a portion of the top surface and is transparent; and  
11 a conductive trace that extends outside the insulative housing and is electrically  
12 connected to the pad inside the insulative housing.

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1 31. (Twice Amended) An optoelectronic semiconductor package device, comprising:  
2 a semiconductor chip that includes an upper surface, a lower surface and four outer side  
3 surfaces between the upper and lower surfaces, wherein the upper surface includes a light  
4 sensitive cell and a conductive pad;  
5 an insulative housing that includes a top surface, a bottom surface and peripheral side  
6 surfaces between the top and bottom surfaces, wherein the insulative housing further includes  
7 first and second insulative housing portions, the first housing portion is a single-piece that  
8 provides the bottom surface, the peripheral side surfaces and a peripheral portion of the top  
9 surface, contacts the lower surface and the outer side surfaces, is spaced from the light sensitive  
10 cell and is non-transparent, and the second housing portion is a single-piece or double-piece that  
11 provides a central portion of the top surface within the peripheral portion of the top surface,  
12 contacts the first housing portion, the light sensitive cell and the conductive trace, is spaced from  
13 the lower surface, is farther from the bottom surface than the lower surface is from the bottom  
14 surface, is transparent and is exposed; and  
15 a conductive trace that extends outside the insulative housing and is electrically  
16 connected to the pad inside the insulative housing.

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1 61. (Amended) An optoelectronic semiconductor package device, comprising:  
2 a semiconductor chip that includes an upper surface, a lower surface and outer side  
3 surfaces between the upper and lower surfaces, wherein the upper surface includes a light  
4 sensitive cell and a conductive pad;  
5 an insulative housing that includes a first single-piece non-transparent insulative housing  
6 portion that contacts the chip, covers the lower surface and the side surfaces and is spaced from  
7 the light sensitive cell and a second transparent insulative housing portion that contacts the first  
8 housing portion and the light sensitive cell, is spaced from the lower surface and is exposed; and

*C3* a conductive trace that extends through an opening in the first housing portion, extends

10 outside the insulative housing and is electrically connected to the pad inside the insulative  
11 housing.

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*CH* 1 66. (Amended) An optoelectronic semiconductor package device, comprising:

2 a semiconductor chip that includes an upper surface, a lower surface and outer side  
3 surfaces between the upper and lower surfaces, wherein the upper surface includes a light  
4 sensitive cell and a conductive pad;

5 an insulative housing that includes a first single-piece non-transparent insulative housing  
6 portion that contacts the chip, covers the lower surface and the side surfaces and is spaced from  
7 the light sensitive cell and a second transparent insulative housing portion that contacts the first  
8 housing portion and the light sensitive cell, is spaced from the lower surface and is exposed; and  
9 a conductive trace that extends through an opening in the first housing portion, extends  
10 outside the insulative housing, is bent outside the insulative housing and is electrically connected  
11 to the pad inside the insulative housing.

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*Cb* 1 71. (Amended) An optoelectronic semiconductor package device, comprising:

2 a semiconductor chip that includes an upper surface, a lower surface and outer side  
3 surfaces between the upper and lower surfaces, wherein the upper surface includes a light  
4 sensitive cell and a conductive pad;

5 an insulative housing that includes a first single-piece non-transparent insulative housing  
6 portion that contacts the chip, covers the lower surface and the side surfaces and is spaced from  
7 the light sensitive cell and a second transparent insulative housing portion that contacts the first  
8 housing portion and the light sensitive cell, is spaced from the lower surface and is exposed; and  
9 a conductive trace that extends through an opening in the first housing portion, extends  
10 outside the insulative housing, does not contact an insulative material outside the first housing  
11 portion and is electrically connected to the pad inside the insulative housing.

1        76. (Amended) An optoelectronic semiconductor package device, comprising:  
2              a semiconductor chip that includes an upper surface, a lower surface and outer side  
3              surfaces between the upper and lower surfaces, wherein the upper surface includes a light  
4              sensitive cell and a conductive pad;  
5              an insulative housing that includes a first single-piece non-transparent insulative housing  
6              portion that covers the lower surface and the side surfaces and is spaced from the light sensitive  
7              cell and a second transparent insulative housing portion that contacts the first housing portion  
8              and the light sensitive cell, is spaced from the lower surface and is exposed; and  
9              a conductive trace that includes a lead and a planar metal trace, wherein the lead extends  
10          through an opening in the first housing portion, extends outside the insulative housing and is  
11          electrically connected to the pad inside the insulative housing, and the planar metal trace contacts  
12          and is not integral with the lead, extends across one of the side surfaces and does not extend  
13          outside the insulative housing.

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1        81. (Amended) An optoelectronic semiconductor package device, comprising:  
2              a semiconductor chip that includes an upper surface, a lower surface and outer side  
3              surfaces between the upper and lower surfaces, wherein the upper surface includes a light  
4              sensitive cell and a conductive pad;  
5              an insulative housing that includes a first single-piece non-transparent insulative housing  
6              portion that covers the lower surface and the side surfaces and is spaced from the light sensitive  
7              cell and a second transparent insulative housing portion that contacts the first housing portion  
8              and the light sensitive cell, is spaced from the lower surface and is exposed; and  
9              a conductive trace that includes a lead and a planar metal trace, wherein the lead extends  
10          through an opening in the first housing portion, extends outside the insulative housing and is  
11          electrically connected to the pad inside the insulative housing, and the planar metal trace contacts  
12          and is not integral with the lead, contacts the first and second housing portions, extends across  
13          one of the side surfaces and does not extend outside the insulative housing.

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1        86. (Amended) An optoelectronic semiconductor package device, comprising:  
2              a semiconductor chip that includes an upper surface, a lower surface and outer side  
3              surfaces between the upper and lower surfaces, wherein the upper surface includes a light  
4              sensitive cell and a conductive pad;  
5              an insulative housing that includes a first single-piece non-transparent insulative housing  
6              portion that covers the lower surface and the side surfaces and is spaced from the light sensitive  
7              cell and a second transparent insulative housing portion that contacts the first housing portion  
8              and the light sensitive cell, is spaced from the lower surface and is exposed; and  
9              a conductive trace that includes a lead and a planar metal trace, wherein the lead extends  
10          through an opening in the first housing portion, extends outside the insulative housing and is  
11          electrically connected to the pad inside the insulative housing, and the planar metal trace contacts  
12          and is not integral with the lead, contacts the first and second housing portions, overlaps the pad,  
13          extends across one of the side surfaces and does not extend outside the insulative housing.

1        91. (Amended) An optoelectronic semiconductor package device, comprising:  
2              a semiconductor chip that includes an upper surface, a lower surface and four outer side  
3              surfaces between the upper and lower surfaces, wherein the upper surface includes a light  
4              sensitive cell and a conductive pad;  
5              an insulative housing that includes a top surface, a bottom surface and peripheral side  
6              surfaces between the top and bottom surfaces, wherein the insulative housing further includes  
7              first and second insulative housing portions, the first housing portion is a single-piece that  
8              contacts the chip, covers the lower surface and the outer side surfaces and provides the bottom  
9              surface, the peripheral side surfaces and a peripheral portion of the top surface and is non-  
10          transparent, the second housing portion contacts the first housing portion and the light sensitive  
11          cell, provides a central portion of the top surface within the peripheral portion of the top surface  
12          and is transparent, and the top surface is exposed; and  
13              a conductive trace that extends outside the insulative housing and is electrically  
14          connected to the pad inside the insulative housing.

1        96. (Amended) An optoelectronic semiconductor package device, comprising:  
2              a semiconductor chip that includes an upper surface, a lower surface and four outer side  
3              surfaces between the upper and lower surfaces, wherein the upper surface includes a light  
4              sensitive cell and a conductive pad;  
5              an insulative housing that includes a top surface, a bottom surface and peripheral side  
6              surfaces between the top and bottom surfaces, wherein the insulative housing further includes  
7              first and second insulative housing portions, the first housing portion is a single-piece that  
8              contacts the chip, covers the lower surface and the outer side surfaces and provides the bottom  
9              surface, the peripheral side surfaces and a peripheral portion of the top surface and is non-  
10             transparent, the second housing portion contacts the first housing portion and the light sensitive  
11             cell, provides a central portion of the top surface within the peripheral portion of the top surface  
12             and is transparent, the first housing portion is exposed at the top surface, bottom surface and  
13             peripheral side surfaces, and the second housing portion is exposed at the top surface; and  
14              a conductive trace that extends outside the insulative housing and is electrically  
15              connected to the pad inside the insulative housing.

1        101. (Amended) An optoelectronic semiconductor package device, comprising:  
2              a semiconductor chip that includes an upper surface, a lower surface and four outer side  
3              surfaces between the upper and lower surfaces, wherein the upper surface includes a light  
4              sensitive cell and a conductive pad;  
5              an insulative housing that includes a top surface, a bottom surface and peripheral side  
6              surfaces between the top and bottom surfaces, wherein the insulative housing further includes  
7              first and second insulative housing portions, the first housing portion is a single-piece that  
8              contacts the chip, covers the lower surface and the outer side surfaces and provides the bottom  
9              surface, the peripheral side surfaces and a peripheral portion of the top surface and is non-  
10             transparent, the second housing portion contacts the first housing portion and the light sensitive  
11             cell, provides a central portion of the top surface within the peripheral portion of the top surface  
12             and is transparent, the central portion of the top surface is recessed relative to the peripheral  
13             portion of the top surface, and the top surface is exposed; and

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a conductive trace that extends outside the insulative housing and is electrically

15 connected to the pad inside the insulative housing.

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1           106. (Amended) An optoelectronic semiconductor package device, comprising:  
2           a semiconductor chip that includes an upper surface, a lower surface and four outer side  
3           surfaces between the upper and lower surfaces, wherein the upper surface includes a light  
4           sensitive cell and a conductive pad;

5           an insulative housing that includes a top surface, a bottom surface and peripheral side  
6           surfaces between the top and bottom surfaces, wherein the insulative housing further includes  
7           first and second insulative housing portions, the first housing portion is a single-piece that  
8           contacts the chip, covers the lower surface and the outer side surfaces and provides the bottom  
9           surface, the peripheral side surfaces and a peripheral portion of the top surface and is non-  
10          transparent, the second housing portion contacts the first housing portion and the light sensitive  
11          cell, provides a central portion of the top surface within the peripheral portion of the top surface  
12          and is transparent, the central portion of the top surface is recessed relative to the peripheral  
13          portion of the top surface, the first housing portion is exposed at the top surface, bottom surface  
14          and peripheral side surfaces, and the second housing portion is exposed at the top surface; and  
15           a conductive trace that extends outside the insulative housing and is electrically  
16          connected to the pad inside the insulative housing.

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1           111. (Amended) An optoelectronic semiconductor package device, comprising:

2           a semiconductor chip that includes an upper surface, a lower surface and four outer side  
3           surfaces between the upper and lower surfaces, wherein the upper surface includes a light  
4           sensitive cell and a conductive pad;

5           an insulative housing that includes a top surface, a bottom surface and peripheral side  
6           surfaces between the top and bottom surfaces, wherein the insulative housing further includes  
7           first and second insulative housing portions, the first housing portion is a single-piece that  
8           contacts the chip, covers the lower surface and the outer side surfaces and provides the bottom  
9           surface, the peripheral side surfaces and a peripheral portion of the top surface and is non-  
10          transparent, the second housing portion contacts the first housing portion and the light sensitive

11      cell, provides a central portion of the top surface within the peripheral portion of the top surface  
12      and is transparent, and the top, bottom and peripheral side surfaces are exposed; and  
13                a conductive trace that extends outside the insulative housing, is located between the  
14      second housing portion and the chip inside the insulative housing, is spaced from the top surface  
15      and is electrically connected to the pad inside the insulative housing.

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1                116. (Amended) An optoelectronic semiconductor package device, comprising:  
2                a semiconductor chip that includes an upper surface, a lower surface and four outer side  
3      surfaces between the upper and lower surfaces, wherein the upper surface includes a light  
4      sensitive cell and a conductive pad;  
5                an insulative housing that includes a top surface, a bottom surface and peripheral side  
6      surfaces between the top and bottom surfaces, wherein the insulative housing further includes  
7      first and second insulative housing portions, the first housing portion is a single-piece that  
8      contacts the chip, covers the lower surface and the outer side surfaces and provides the bottom  
9      surface, the peripheral side surfaces and a peripheral portion of the top surface and is non-  
10     transparent, the second housing portion contacts the first housing portion and the light sensitive  
11     cell, provides a central portion of the top surface within the peripheral portion of the top surface  
12     and is transparent, and the top, bottom and peripheral side surfaces are exposed; and  
13                a conductive trace that extends outside the insulative housing, includes a top surface that  
14      faces away from the chip and contacts the second housing portion inside the insulative housing,  
15      includes a bottom surface that faces towards the chip and contacts the second housing portion  
16      inside the insulative housing, is spaced from the top and bottom surfaces, extends through one of  
17      the peripheral side surfaces and is electrically connected to the pad inside the insulative housing.

1                121. (Amended) An optoelectronic semiconductor package device, comprising:  
2                a semiconductor chip that includes an upper surface, a lower surface and four outer side  
3      surfaces between the upper and lower surfaces, wherein the upper surface includes a light  
4      sensitive cell and a conductive pad;  
5                an insulative housing that includes first and second insulative housing portions, wherein  
6      the first housing portion is a single-piece that covers the lower surface and the outer side surfaces

7 and includes a top surface, a bottom surface, peripheral side surfaces between the top and bottom  
8 surfaces, a peripheral ledge at the top surface, and inner side surfaces inside the peripheral ledge  
9 opposite the peripheral side surfaces that extend from the top surface towards the bottom surface  
10 and are spaced from the bottom surface and is non-transparent, and the second housing portion is  
11 located within and recessed relative to the peripheral ledge, contacts the light sensitive cell, does  
12 not extend midway between the upper and lower surfaces outside the chip and is transparent; and  
13 a conductive trace that extends outside the insulative housing and is electrically  
14 connected to the pad inside the insulative housing.

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1 126. (Amended) An optoelectronic semiconductor package device, comprising:  
2 a semiconductor chip that includes an upper surface, a lower surface and four outer side  
3 surfaces between the upper and lower surfaces, wherein the upper surface includes a light  
4 sensitive cell and a conductive pad;  
5 CJS an insulative housing that includes first and second insulative housing portions, wherein  
6 the first housing portion is a single-piece that includes a top surface, a bottom surface, peripheral  
7 side surfaces between the top and bottom surfaces, a peripheral ledge at the top surface, and inner  
8 side surfaces inside the peripheral ledge opposite the peripheral side surfaces that extend from  
9 the top surface towards the bottom surface and are spaced from the bottom surface and is non-  
10 transparent, the second housing portion is located within and recessed relative to the peripheral  
11 ledge, contacts the light sensitive cell, does not extend midway between the upper and lower  
12 surfaces outside the chip and is transparent, the first housing portion is exposed at the top  
13 surface, bottom surface and peripheral side surfaces, and the second housing portion is exposed  
14 at the top surface; and  
15 a conductive trace that extends outside the insulative housing and is electrically  
16 connected to the pad inside the insulative housing.

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1 CJS 131. (Amended) An optoelectronic semiconductor package device, comprising:  
2 a semiconductor chip that includes an upper surface, a lower surface and four outer side  
3 surfaces between the upper and lower surfaces, wherein the upper surface includes a light  
4 sensitive cell and a conductive pad;

5           an insulative housing that includes first and second insulative housing portions, wherein  
6       the first housing portion is a single-piece that covers the lower surface and the outer side surfaces  
7       and includes a top surface, a bottom surface, peripheral side surfaces between the top and bottom  
8       surfaces, a peripheral ledge at the top surface, and inner side surfaces inside the peripheral ledge  
9       opposite the peripheral side surfaces that extend from the top surface towards the bottom surface  
10      and are spaced from the bottom surface and is non-transparent, and the second housing portion is  
11     located within and recessed relative to the peripheral ledge, contacts the light sensitive cell and  
12     the inner side surfaces, does not extend midway between the upper and lower surfaces outside  
13     the chip and is transparent; and  
14           a conductive trace that extends outside the insulative housing and is electrically  
15     connected to the pad inside the insulative housing.

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C17       136. (Amended) An optoelectronic semiconductor package device, comprising:  
C17       2       a semiconductor chip that includes an upper surface, a lower surface and four outer side  
3       surfaces between the upper and lower surfaces, wherein the upper surface includes a light  
4       sensitive cell and a conductive pad;  
5           an insulative housing that includes first and second insulative housing portions, wherein  
6       the first housing portion is a single-piece that covers the lower surface and the outer side surfaces  
7       and includes a top surface, a bottom surface, peripheral side surfaces between the top and bottom  
8       surfaces, a peripheral ledge at the top surface, and inner side surfaces inside the peripheral ledge  
9       opposite the peripheral side surfaces that extend from the top surface towards the bottom surface  
10      and are spaced from the bottom surface and is non-transparent, the second housing portion is  
11     located within and recessed relative to the peripheral ledge, contacts the light sensitive cell and  
12     the inner side surfaces, does not extend midway between the upper and lower surfaces outside  
13     the chip and is transparent, the first housing portion is exposed at the top surface, bottom surface  
14     and peripheral side surfaces, and the second housing portion is exposed at the top surface; and  
15           a conductive trace that extends outside the insulative housing and is electrically  
16     connected to the pad inside the insulative housing.

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1           141. (Amended) An optoelectronic semiconductor package device, comprising:  
2           a semiconductor chip that includes an upper surface, a lower surface and four outer side  
3           surfaces between the upper and lower surfaces, wherein the upper surface includes a light  
4           sensitive cell and a conductive pad;  
5           an insulative housing that includes first and second insulative housing portions, wherein  
6           the first housing portion is a single-piece that covers the lower surface and the outer side surfaces  
7           and includes a top surface, a bottom surface, uncurved peripheral side surfaces between the top  
8           and bottom surfaces, a peripheral ledge at the top surface, and inner side surfaces inside the  
9           peripheral ledge opposite the peripheral side surfaces that extend from the top surface towards  
10          the bottom surface and are spaced from the bottom surface and is non-transparent, and the second  
11          housing portion extends into the peripheral ledge, contacts the light sensitive cell, does not  
12          extend midway between the upper and lower surfaces outside the chip and is transparent; and  
13           a conductive trace that extends outside the insulative housing and is electrically  
14          connected to the pad inside the insulative housing.

1           146. (Amended) An optoelectronic semiconductor package device, comprising:  
2           a semiconductor chip that includes an upper surface, a lower surface and four outer side  
3           surfaces between the upper and lower surfaces, wherein the upper surface includes a light  
4           sensitive cell and a conductive pad;  
5           an insulative housing that includes first and second insulative housing portions, wherein  
6           the first housing portion is a single-piece that covers the lower surface and the outer side surfaces  
7           and includes a top surface, a bottom surface, uncurved peripheral side surfaces between the top  
8           and bottom surfaces, a peripheral ledge at the top surface, and inner side surfaces inside the  
9           peripheral ledge opposite the peripheral side surfaces that extend from the top surface towards  
10          the bottom surface and are spaced from the bottom surface and is non-transparent, the second  
11          housing portion extends into the peripheral ledge, contacts the light sensitive cell, does not  
12          extend midway between the upper and lower surfaces outside the chip and is transparent, the first  
13          housing portion is exposed at the top surface, bottom surface and peripheral side surfaces, and  
14          the second housing portion is exposed at the top surface; and

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- 15 a conductive trace that extends outside the insulative housing and is electrically  
16 connected to the pad inside the insulative housing.
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